UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

March 30, 2022

Subject: Maximum Allowable Injection Pressure – Penneco Environmental Solutions, LLC – Sedat #4A
Well Permit **PAS2D702BALL**

From: David Rectenwald
Source Water & UIC Section (3WD22)

To: File

Penneco Environmental Solutions – Sedat #4A located at:

Plum Borough
Allegheny County, Pennsylvania
Sedat #4A: Latitude 40° 31' 36.897" Longitude -79° 42' 39.6972"

Underground Injection Control regulations promulgated in response to requirements of the Safe Drinking Water Act include 40 CFR 146.23 (a) (1) for new Class II wells, which state:

Injection pressure at the wellhead shall not exceed a maximum which shall be calculated to assure that the pressure during injection does not initiate new fractures or propagate existing fractures in the confining zone adjacent to the USDWs. In no case shall injection pressure cause the movement of injection or formation fluids into an underground source of drinking water.

In order to satisfy the UIC regulatory requirements to establish a permitted maximum allowable injection pressure that is below the injection formation fracture pressure, EPA Region III is requiring Penneco to perform direct testing of the injection zone for the Sedat 4A. To establish the Fracture Gradient (FG) for the Murrysville Formation a step-rate test shall be conducted prior to sustained fluid injection. The maximum allowable injection pressure (MAIP) will then be calculated using Instantaneous Shut-In pressure (ISIP) data obtained from the testing using the following equation:

$$MAIP = (FG – (0.433) * SG) * D)$$

The values used in this equation are defined as:

$$FG = (ISIP + (0.422 * SG * D)) / D$$

Where “D” is the true vertical depth in feet. The value for D is the depth of the top open formation and “SG” is the specific gravity of the fluid being injected.

The results of all testing must be provided to EPA before establishing a MAIP and authorizing injection for the well.

David Rectenwald
Source Water & UIC Section